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Labor Saving in Transportation

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An important change is taking place in the transportation industry which has been brought about by the increasing cost of cargo handling. In an attempt to reduce the cost of transportation a new method of cooperation between over-the-road trucking, railroads, and steamships has emerged. This is the piggy-back method, i.e., the shipping of highway trailers on railroad flatcars, the removal of the container bodies from truck trailers, and their shipment by container-ships; and even the shipment of the container first over the highway, then by ship, then by rail, and lastly again over the highway.

The purpose has been to reduce the labor cost involved in the transfer of the merchandise by hand at each point where a new method of transport is involved.

The use of these new methods is important to the economy of Florida because it may reduce the cost to residents of the products arriving from other states and also may reduce the cost of products being shipped out of Florida to other consuming areas.

Piggy-Back Rail Shipment

The first method to be discussed is the piggy-back rail shipment. In this case a trailer is loaded at the factory, warehouse, or packing plant and drawn over the highway to the railroad. Here the loaded trailer is backed onto a railroad flatcar and securely fastened. When the system was first introduced the existing flatcars could accommodate only one trailer, but now the railroads have developed an 85-foot flatcar that will take two 40-foot trailers. Many of these flatcars are owned by Trailer Train, a company jointly owned by over thirty railroads, including the Atlantic Coast Line and the Seaboard Air Line serving Florida. There are almost 5,000 flatcars and the owning railroads represent over two-thirds of the railroad mileage of the United States.

The trailers moved by piggy-back are owned by the railroads, shippers, freight forwarders, or trucking companies. The Fruit Growers Express has bought 200 reefer trailers for shipping Florida citrus products to the North. A full train of piggy-backs leaves Lakeland by Atlantic Coast Line every Saturday, arriving in New York in 32 hours for Monday morning delivery. The Seaboard Air Line dispatches a similar train, leaving Auburndale at 5:00 p.m. on Tuesday and arriving in Kearny, New Jersey, at 2:00 a.m. on Thursday.

It is estimated that Florida is now shipping 1,500 trailers of perishable freight each week plus 1,000 trailers of nonperishable cargo. The reefers (refrigerated trailers) used for shipment of perishables northbound can be used for nonperishable products southbound. In addition to these two piggy-back trains, trailers are also carried on regular daily freight trains of the Atlantic Coast Line, Seaboard Air Line, and the Florida East Coast. There are many points in the state of Florida where the transfer from highway to railroad can take place, but the transfer points involve the construction of a special loading ramp.

There are five plans under which trailers are carried on the railroads and each plan has certain advantages and disadvantages. The plans are as follows:

Plan I.—Under this plan the railroad carries a trailer owned by a common carrier trucking company. The shipment moves on a motor carrier bill of lading and the shipper pays freight under the terms of the motor carrier tariff; the shipper has no contact with the railroad and the railroad assumes no liability toward the shipper. The advantage of Plan I to the motor carrier is that the freight he pays to the railroad for the carriage of two trailers on one flatcar will approximate the over-the-road cost of driving one trailer from Florida to New York. From the standpoint of the public this plan removes some of the highway congestion caused by the over-the-road movement of the trucks. It is estimated that at the present time Plan I represents about 15 per cent of the piggy-back movement, but this is expected to grow as the economic benefits become widely recognized. This plan is economical only when the truck line has two trailers to move at the same time and is most economical for the larger 40-foot rather than smaller 32- to 36-foot trailers.

Plan II.—Under this plan the railroad has complete control of the shipment and supplies the shipper with a trailer owned or leased by the railroad. The railroad performs "door-to-door" service but the shipper receives

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AUTHOR'S NOTE: The writer's interest in this subject was stimulated last year while supervising the Master of Arts thesis of Colonel Lunsford C. Pittman who wrote on the subject "Containerization of Cargo for Shipment by Ocean Transportation." In preparing this article the author has been greatly assisted by various men in the transportation field who have given unstintingly of their time.

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a lower rate if he picks up the trailer at the receiving yard at point of destination and hauls it to his factory or warehouse himself. He must return the empty trailer within 24 hours or pay a demurrage charge of $10 for the second 24 hours, $20 for the third 24 hours, and $30 per day thereafter.

These trailers carry an average load of 39,600 pounds per trailer. It is estimated that a normal load from Florida to Kearny, New Jersey, will cost about $50 less than a similar load transported wholly over-the-road. At the present time Plan II constitutes the bulk of the movement from Florida to the North, amounting to between 80 and 85 per cent of the total movement. The railroads have invested large sums of money in this equipment either individually or cooperatively in a jointly owned company such as Fruit Growers Express. The trailers cost between $9,000 and $16,000 each, depending on the insulation and the freezing units on the reefer trailers.

Plan III.—In this case the shipper owns or leases the trailer. The shipper delivers the trailer at railhead and takes delivery at the end of rail carriage. The shipper pays for the carriage of his trailer and finds it economical to move his cargo in this manner. It is estimated that the movement under Plan III constitutes only about 5 per cent of the piggy-back movement into Florida. An interesting use of this plan is by the Food Fair grocery chain which move their trailers into a territory and then make delivery to the individual supermarkets.

Plan IV.—The shippers own or lease both the trailer and the flatcar and the railroad collects on a mileage basis regardless of commodities carried. There does not seem to be any movement under this plan at present in Florida.

Plan V.—Under this plan the railroad and the common carrier truck line would file a "joint rate and route" and either carrier could originate the traffic, and the agreement would provide for a joint sharing of the freight collected. This may become important in the future but at the present is little used.

The above plans provide the potential shipper with several different methods of combining the advantages of over-the-road transportation with the economy of rail transportation. As an example of the flexibility permitted, a shipment of a trailer load of watermelons can be delivered to several stores at the destination. Under Plan II the railroad will deliver to one point in the destination area (this may be any point within 5 miles of the city limits and sometimes points even more remote are incorporated in the delivery area), and then for an additional $5 per stop will stop in any other desired location within the terminal area.

Automobile Carrier

Somewhat similar, but not a true trailer-on-flatcar operation, is the new tri-level automobile carrier. A large frame is built on a flatcar which will accommodate 12 to 15 autombiles at one time. The automobiles are loaded on drive-away trailers at the factory, trucked to a rail end, and moved by rail to a central point in a distribution area. Here they are driven off the flatcar on to a standard car delivery trailer to be distributed over-the-road in the usual manner. Automobiles also move under Plan V at joint highway-rail rates. An example is the movement of General Motors cars trucked from Flint, Lansing, and Pontiac, to Louisville, Kentucky, where they are loaded on the tri-level cars. Thence, via Louisville and Nashville Railroad to Atlanta and by the Atlantic Coast Line, they move to Florida. There is a similar movement of American Motors products from Wisconsin to Sanford, Florida. The joint rate is somewhat lower than the cost of trucking to destination.

Rail Container

Another development somewhat similar to the trailer-on-flatcar just described is the use of containers transported without the truck axles and wheels. In this case a standard body (35 feet to 40 feet) is attached with bolts to a truck trailer chassis and hauled over-the-road as any trailer might be. However, when it arrives at the railroad the container is unbolted from the chassis and lifted on a flatcar. The chassis is left at the point of origin and another chassis is used at destination; only the loaded body is transported. The Southern Railway uses this system in shipments from Florida. An advantage of this system is that the container will not extend as high in the air and therefore poses no difficulties for a railroad that has low tunnels on its right-of-way. Some of the railroads have acquired flatcars that will accommodate either trailers or containers, thus giving greater flexibility.

Container-Ship

The container has also been adapted to transportation by water. The Sea-Land service between Jacksonville, Florida, and New York uses an especially designed container-ship to transport 226 fully loaded containers at one time. The containers owned by Sea-Land are trucked over the highways to any point in Florida and upon arrival at Jacksonville are detached from the chassis which will then be available for use by incoming cargo. The ship has built-in equipment for lifting the container off the chassis and depositing it in the hold of the ship. The ship can be completely unloaded and reloaded in one working day. The ship leaves Newark on Thursday, arriving in Jacksonville on Sunday morning; it departs Sunday night, arriving in Newark on Wednesday. Thus one ship is able to furnish weekly service to Florida. The company owns five other container-ships, operating three to Puerto Rico and two to Houston, from New York. The containers are 35 feet in length and the rates provide for a minimum load of 40,000 pounds of citrus products and 35,000 pounds minimum of paper products. These two products constitute the two major items carried by Sea-Land.

Sea-Land illustrates the possibilities of integrated movement using water, highway, and rail in the movement of cargo from the New York area to the Miami area in Florida. The containers are moved to the shipside at Newark as a regular trailer operation. At shipside the containers are loaded into the ship and unloaded from the ship at Jacksonville. At that point they are loaded on railroad flatcars and moved to Miami by way of the Florida East Coast Railroad. In Miami the containers are transferred to the trailer chassis and are moved to destination over-the-road. The Sea-Land service owns 4,500 containers which permits a constantly rotating supply at the points served.

The container-ship operation offers practically the same service as all-truck or piggy-back rail except that the time involved in delivery is from one to two days slower. To compensate for this delay the Interstate Commerce Commission permits the container-ship to quote a rate that is 6 per cent under the rate quoted by piggy-back. This differential is sufficient to attract cargo.

Last year another container-ship operator entered the Newark-Jacksonville run but was not able to survive. The Erie and St. Lawrence Steamship Company had two container-ships especially built for this type of operation. The ships differed from the Sea-Land in that they did not have built-in loading and unloading equipment; the containers were moved into the ship by means of heavy-duty lift trucks. The Erie and St. Lawrence first operated exclusively between Newark and Jacksonville and then between Newark and Miami with a stop in Jacksonville on the return trip. It suspended operations after operating only about six months.

Trailer-Ships

Another operation by water from Florida consists of the TMT trailer-ships. These ships are converted wartime Navy landing craft and operate as a tow behind a seagoing tug. The loaded trailers are backed onto the landing craft and tied down very much as the piggy-backs are tied to the flatcars. A regular service is maintained between Florida and Puerto Rico.

Advantages

The following are claimed as the advantages of piggy-back and containerization:

Lower freight rates.—As discussed above, it can be seen that if a trucking company uses Plan I to move trailers it will save part of the over-the-road cost of moving the trailers to destination. As reported, these savings are at a maximum when two 40-foot trailers are moved on the same flatcar and are fully loaded. Under Plan II the shipper has the advantage of the lower rates quoted by the railroads for door-to-door delivery of cargo. This is a saving compared with an all-truck movement from point of origin to destination. The container-ship operation has a further 6-per-cent saving compared with the piggy-back operation.

Lower handling cost.—The reason that the freight rates can be lower is that there are definite advantages in handling cost. A ship that can be loaded with containers in four hours, would require two days by traditional methods. Shipping watermelons by piggy-back as against boxcar eliminates two extra handlings of melons as well as the extra cost and susceptibility to damage.

Reduction in pilferage.—In many shipments this may be a major advantage of the use of containers. The goods are loaded at point of origin and the container securely locked until it is ready to be unloaded at ultimate destination. In shipments of liquor, cigarettes, and articles of high value, pilferage is a constant threat.

Reduction in cargo damage.—When the cargo is loaded at point of origin by the originating shipper he has the responsibility of properly packing and bracing the cargo. He knows that he is responsible for failure to load properly. Once the trailer is moving, utmost precautions are taken to anchor properly the trailer to the flatcar or to seat the container in the hold of the containership. In-transit damage has been reduced to a very low point.

Reduction of insurance cost.—The two advantages cited above are reflected by another advantage: the reduction of insurance cost. As breakage and pilferage are two very important items in determining insurance rates, their reduction reduces the cost of insurance to the shipper.

Reduction of warehousing costs.—In the days when shipments over the railroads had to be loaded into boxcars at a company siding and delivered to a siding at destination, most companies had to maintain warehouses at both ends of the rail movement. This involved greater cost for inventories, the costs of operating the warehouse, and the costs of the extra handling at both ends. Now with piggy-back and container operation the goods can move from a factory (often without railroad sidings) directly to the ultimate consumer without the extra cost of one or two movements in and out of warehouses.

Reduction in shortage of boxcars.—The use of trailers can reduce the shortage of boxcars by providing additional equipment at a lower investment and also provide faster turn-around.

Reduction in highway congestion.—A social benefit has resulted through the reduction of highway congestion. Much of the delivery of trailers to destinations within metropolitan districts can be made in the early morning hours before normal traffic becomes heavy. The over-the-road movement is also reduced. Even with the Interstate Highway System, increasingly severe highway traffic congestion will have to be faced.

Outlook

The shipper and the consuming public are not greatly concerned with the way goods are transported between producer and consumer. Their interest is in the rapid, safe, and economical delivery of goods from point of origin to final destination. With the different modes of transportation competing with each other, highways could offer speed and convenience of door-to-door delivery, railroads could offer dependable service between rail points, and at reasonable rates, but often the added cost and inconvenience at both ends of the line offset the advantage of the cheap rail haul. Water transportation was the cheapest of the transportation agencies, but the delays and congestion at the ports nullified the rate advantage. With the development of containerization, container-ships, and piggy-back, the benefits of each mode of transportation can be enjoyed while many of the disadvantages are done away with. The new methods give the door-to-door delivery that was originally the big advantage of the trucking industry and made it possible for trucks to capture such a large share of the railroads' less-than-carload freight. Provided also is the possibility of utilizing the more economical movement of the trailers by rail or water or the movement of containers by rail or water.

It remains to be seen how well the different modes of transportation cooperate with each other. Unless there is a genuine desire to cooperate many of the advantages can be lost. Under Plan I the trucking industry takes the initiative in the use of piggy-back or container service on the railroads. Of course, the railroads must quote rates that permit the trucking companies to use the rail service to advantage. A possible stumbling block in the way of expansion under Plan I may be the attitude of the transport union. If the union refuses to permit the trucking companies to take full advantage of the rail service by threats of strikes or by requiring some form of "featherbedding" agreement to preserve more jobs for union members, the Plan I growth may be stunted.

There is also a possibility that the railroads may become so satisfied with the results of Plan II operation that they lose interest in Plan I, III, IV, and V and push only for the growth of their own service. One drawback under Plan II is that there is no universal interchange of equipment between the different railroads. Those that are members of the Fruit Growers Express interchange the trailers, while those that are members of the Trailer Train exchange flatcars, but there are many important railroads that are members of neither group and have developed their own specialized equipment for use only on their own railroad. If full benefits are to be enjoyed by the shipping public, a universal system must evolve. This will require some form of standardization of trailer or container sizes, and standardization of flatcars with a standard tie-down system.

There are great possibilities of future growth under Plan III. Many companies may develop their own trailer fleet as has been done by Food Fair. It is less likely that many shippers will invest in the flatcars in order to take advantage of Plan IV, but if there is a large enough differential in the rates between Plan III and Plan IV some companies will be encouraged to do so. There are fewer restrictions applying to shipment under Plan IV as the railroad makes no distinction in rates regardless of merchandise transported. There are limitations under Plan III which prohibit more than 60 per cent of the combined load of the two trailers from being the same commodity.

The greatest potential for future cooperation between the trucking industry and the railroads exists under Plan V. Here a genuine integration can take place with joint rates and through-routes and an equitable distribution of the receipts between the two or more carriers. If this system were extended to include water transport as well, it would be truly integrated. In 1959 only 1.34 per cent of the total carloadings were by trailer or container, but the percentage is growing and this may lead, in the not too distant future, to greater and greater benefits to the whole economy.

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